REMARKS

The Invention

Claim 1 is directed to a cigarette having a tobacco rod and a wrapper for the rod, wherein the wrapper is combustible, burns, and ashes, and comprises porous particulate cerium oxide.

Claim 12 is directed to a cigarette comprising a tobacco rod and a cigarette paper that is combustible, burns, and ashes, and which paper has a sidestream smoke treatment composition comprising, in combination, a rare earth metal oxide and an essentially non-combustible finely divided porous particulate adjunct for the rare earth metal oxide.

Claim 20 is directed to a low sidestream smoke cigarette comprising a tobacco rod, and a treatment paper, which is combustible, burns, and ashes. The treatment paper has a sidestream smoke treatment composition. The treatment composition comprises, in combination, a rare earth metal oxide and an essentially non-combustible finely divided porous particulate adjunct for said rare earth metal oxide.

Claim 45 is directed to a low sidestream smoke cigarette comprising a tobacco rod and a treatment paper that is combustible, burns, and ashes. The treatment paper has a sidestream smoke treatment composition comprising an oxygen storage and donor metal oxide oxidation catalyst precursor and an essentially non-combustible finely divided porous particulate adjunct for the catalyst. The oxygen storage and donor metal oxide oxidation catalyst release oxygen at free burn rate temperatures for the cigarette.

Claim 46 is directed to a combustible cigarette paper for use on a smokable tobacco rod of a cigarette. The combustible cigarette paper is for reducing the sidestream smoke emitted from a burning cigarette. The paper is combustible, burns, and ashes, and has a sidestream smoke treatment comprising an oxygen storage and donor metal oxide oxidation catalyst precursor and an essentially non-combustible finely divided porous particulate adjunct. The

oxygen storage and donor metal oxide oxidation catalyst release oxygen at free burn rate temperatures of a cigarette made from the paper.

The Office Action

Claims 2 and 3 are not rejected on the merits.

Claim 1 stands rejected under 35 U.S.C. § 102(b) as anticipated by Snaidr, WO 98/16125, particularly over claim 29 thereof.

Claims 1, 4-7, 12-14, 17-18, 20-21, and 45-46 stand rejected under 35 U.S.C. § 102(e) as anticipated by Bowen, US 6,286,516, or under 35 U.S.C. § 102(a) as anticipated by Bowen, WO 99/53778. Cerium oxide is said to be applied to zeolite substrate. In particular, according to the Office Action, the oxygen storage component of Bowen releases oxygen at 300°C, whereas the free burn temperature of those cigarettes is between about 400 and 900°C.

Claims 8 and 19 stand rejected under 35 U.S.C. § 103(a) as obvious over Bowen WO '778 in view of Schlatter, US 5,040,551. According to the Office Action, these documents indicate that, at the time the invention was made, it would have been obvious to have used iron oxide as catalyst.

Claim 9 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Bowen '778. The Office Action admits that the loading rate of cerium oxide is not disclosed, but asserts that the amount, and optimization of the amount, would have been obvious to preclude depletion of the number of puffs in the cigarette by controlling the amount of oxygen release.

Claims 10-11, 15-16, and 22-23 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bowen '778 in view of Grodek, US 5,004,711. Bowen is said to teach sorbatives, such as a zeolite, and teaches that zirconium oxide is a sorbative. The Office Action asserts that, at the time the invention was made, it would have been obvious to substitute known sorbents.

Claims 1, 12, 20 and 45-46 stand rejected on the ground of non-statutory obviousness-type double patenting over claims 5 and 13 of United States Patent Number 6,286,516. Although the claims are not identical, the Office Action asserts that it would have been obvious that to put cerium oxide on the porous adjunct meets the claim limitation requiring a porous cerium oxide, and to have expected the catalyst to release oxygen at free burn temperatures of the cigarette.

The Cited Documents

WO 98/16125 is directed to a non-combustible apparatus used in combination with a tobacco product to control sidestream smoke and to increase the number of puffs available to the smoker from a given amount of tobacco. The non-combustible apparatus comprises a tube having a predetermined porosity into which tobacco product is placed. The porosity of the tube is selected to provide sidestream smoke reduction and to reduce the free-burn rate between puffs. Claim 29 is directed to this apparatus having a ceramic oxide comprising cerium oxide. Importantly, the device of WO 98/16125 is re-usable because it is not combustible and does not burn or ash.

Bowen, United States Patent Number 6,286,516, is directed to a porous, non-combustible material for treating sidestream smoke. This material is used to surround a conventional cigarette. In particular, Bowen is directed to a cigarette that has a non-combustible wrapper that surrounds and is in substantial contact with conventional cigarette paper portion of a cigarette.

The material has a high porosity which encourages conventional free-burn rate for a cigarette. The oxygen storage component releases oxygen at free-burn rate temperatures adjacent a burning coal to both:

a) compensate for the material reducing rate of oxygen diffusion to a burning coal to ensure conventional free-burn rate; and

b) contribute to the oxidation treatment of components of sidestream smoke.

The cigarette is designed to have a sufficiently high porosity, usually in excess of 200 Coresta units, which encourages a conventional free-burn rate of the conventional cigarette. In other words, the wrapper is transparent to the cigarette so the cigarette burns at its normal rate to give the usual flavor and taste of a conventional cigarette. The presence of the oxygen donor material is to release sufficient oxygen to compensate for any reduction in oxygen diffusion to the burning coal caused by the non-combustible material. Thus, the material ensures the conventional free-burn rate and contributes to the oxidation treatment of components of sidestream smoke.

Schlatter, United States Patent Number 5,040,551, discloses a method for reducing the amount of carbon monoxide produced in combustion of carbonaceous materials. The materials are coated with a non-combustible particulate matter. The particulate matter is microporous and is a high-melting oxide. The thickness of the coating is closely controlled to ensure proper carbon monoxide reduction. Catalysts also can be added. Tobacco may surround the carbonaceous materials.

Grodek, United States Patent Number 5,004,711 is directed to preparation of colloidal zirconium oxide sols. Ceria, calcia, magnesia, and other oxides can be used as stabilizer for zirconia powders obtained.

The Invention in view of the Cited Documents

Rejections under 35 U.S.C. § 102

Claim 1 stands rejected under 35 U.S.C. § 102(b) as anticipated by International Patent Application No. WO 98/16125 to Snaidr *et al.* (equivalent to U.S. Patent No. 6,371,127). In particular, the Office Action asserts that Claim 29 discloses a porous tubular element comprising cerium oxide and encasing a tobacco charge, which is deemed to be a tobacco rod and to disclose the claimed invention.

Applicants respectfully traverse this rejection. The cited document is directed to a *non-combustible* porous apparatus in the form of a tubular element, and neither suggests nor discloses a wrapper that is combustible, burns, and ashes and comprises porous particulate cerium oxide as is required by the claims. The cited document teaches only a non-combustible tubular element, and does not disclose or suggest the cigarette of claim 1.

International Patent Application No. WO 98/16125 to Snaidr *et al.* (equivalent to U.S. Patent No. 6,371,127) is directed to a device that is effectively a cigarette holder that provides sidestream smoke control and free-burn rate control. The exterior tubular element (12) of the device of International Patent Application No. WO 98/16125 contains a cigarette or tobacco charge within its interior and is non-combustible, so it is not consumed when the cigarette is smoked. As described at page 11, lines 11 to 24, the tubular element is reusable. The specification at page 15, lines 15 to 18, teaches that the tubular element is made from non-combustible materials such as ceramics, plastics, treated papers and wood-derived materials.

A catalyst may be incorporated within the material used to form the tubular element (12), on the inner or outer surfaces of the tubular element or in the material used to form the porous elements (18). See at least page 1, lines 23 to 24; page 6, lines 7 to 13; page 7, line 33 to page 8,

line 3; which describe the tubular element (12) and inclusion of a catalyst and at least page 12, lines 15 to 17, which describes the presence of the catalyst in the porous elements (18).

At page 15, line 18, the cited document reiterates that the interior of the tube may be coated with catalytic particles to catalyze oxidation of combustion products. Suitable catalysts are described in detail from page 27, line 29 through to page 33, line 7.

Thus, Applicants respectfully submits that International Patent Application No. WO 98/16125 discloses a *physical* means of controlling sidestream smoke through use of a device that retards airflow (thus controlling free-burn rate) and which optionally has the ability to absorb combustion products and so may be coated with a catalyst to aid oxidation of combustion products. The inclusion of a catalyst is not essential for the device of International Patent Application No. WO 98/16125 to achieve effective sidestream smoke control – note that the presence of a catalyst in the cited document is described as an optional feature in the specification.

Unlike the non-combustible tubular element (12) of International Patent Application No. WO 98/16125, the paper of claim 1 is combustible, and it burns and ashes, as recited in the pending claim. The tubular element (12) of International Patent Application No. WO 98/16125 is a non-combustible apparatus or device, not a wrapper of the claimed invention. Rather than physically retarding airflow with a non-combustible device to reduce sidestream smoke, the present invention achieves sidestream smoke control through the porous and catalytic nature of the porous particulate cerium oxide of the combustible wrapper, not through physical means as in the cited document.

In the Response to Arguments section of the Office Action, the Office Action asserts that it is inherent that each material has a combustion/ignition temperature that when the material is heated to said temperature, the material combusts. Hence, the Office Action asserts that material

of the applied references is combustible. The Office Action acknowledges that while the material may not be combustible at the temperature of the lighted end of the cigarette, it is combustible at its property dependent temperature.

It is submitted that the Office Action is interpreting the clearly-defined "non-combustible" language of the International Patent Application No. WO 98/16125 to be combustible, which is clearly in contrast to the teaching of this reference. It is stated, for example, at page 11, lines 12-15 of International Patent Application No. WO 98/16125, that in order to maintain the structural integrity of the tubular element, "the material is non-combustible and is able to withstand the temperatures of a burning coal receding inward along the tubular element during the smoking process…The non-combustible aspect of the tubular element 12 also permits re-use of the device". One of ordinary skill in the cigarette art would understand the difference between a cigarette wrapper/paper that is combustible, especially in conjunction with the terms "burns and ashes", and a wrapper/paper that is non-combustible, as defined in International Patent Application No. WO 98/16125. Moreover, it is described at page 5, lines 13-20 of Applicants' specification that the combustible cigarette burns like a normal cigarette.

It is well-settled that "the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips v. AWH Corp.*, 415F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). This is the ordinary and customary meaning. *Nystrom v. Trex Co., Inc.*, 424F.3d 1136 (Fed. Cir. 2005). Herein, the very existence of the two mutually-exclusive words "combustible" and "non-combustible" suggests that the words cannot both mean the same thing. Rather, they must be construed as a skilled practitioner would construe them. The terms are clear to the skilled practitioner, and the combustible cigarette wrapper/paper of the claims burns and is consumed,

whereas the non-combustible device using a non-combustible tubular element of the cited document is not consumed, and is re-useable.

In rebuttal to these positions taken in the Office Action, Applicants respectfully submit the declaration of Stanislav M. Snaidr. Mr. Snaidr read and understood the Office Action dated July 10, 2008.

Mr. Snaidr declares, in agreement with the Office Action, that "non-combustible" refers to material not combusted when the cigarette is smoked. (paragraph 3)

In rebuttal to the position taken in the Office Action that "combustible" does not mean what Applicants have argued, Mr. Snaidr declares that "combustible" is known to the skilled practitioner "to mean material that will burn and ash when the cigarette is smoked; the combustible material is therefore, consumed when the cigarette is smoked." (paragraph 4)

Further, Mr. Snaidr declares that, to a skilled practitioner, "non-combustible" means "material that will not burn and ash when the cigarette is smoked; the non-combustible material is there, not consumed when the cigarette is smoked." (paragraph 5)

Mr. Snaidr, a co-inventor of WO98/16125, declares that the tubular element (12) of the device of WO98/16125 "contains a cigarette within its interior and the tubular element is not consumed when the cigarette is smoked. The tubular element is non-combustible." (paragraph 6)

Applicants respectfully submit that these positions relating to the meanings of "combustible" and "non-combustible" asserted in the Office Action are contrary to the knowledge of the skilled practitioner and, therefore, contrary to the ordinary meanings thereof.

Therefore, Applicants respectfully traverse this rejection and earnestly solicit allowance of the pending claims.

Claims 1, 4-7, 12-14, 17-18, 20-21 and 45-46 stand rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,286,516 to Bowen *et al.* (equivalent to International Patent Application No. WO 99/53778).

Applicants respectfully traverse this rejection. International Patent Application No. WO 99/53778 is directed to a cigarette that has a *non-combustible* material which surrounds and is in substantial contact with conventional cigarette paper portion of a cigarette. The *non-combustible* material has a high porosity which encourages conventional free-burn rate for the conventional cigarette it surrounds. The *non-combustible* material includes an oxygen storage component that releases oxygen at free-burn rate temperatures adjacent a burning coal to:

a) compensate for the material reducing rate of oxygen fusion to a burning coal to ensure conventional free-burn rate; and

b) contribute to the oxidation treatment of components of sidestream smoke.

The presence of the oxygen donor material is to release sufficient oxygen to compensate for the treatment material reducing rate of oxygen diffusion to the burning coal to ensure the conventional free-burn rate and as well, contribute to the oxidation treatment of components of sidestream smoke.

Bowen does not teach or suggest a *combustible* wrapper (a structural feature) comprising *porous particulate* cerium oxide of claim 1 or, in general, comprising an oxygen donor material, as claimed in claims 12, 20, 45 and 46. The material of Bowen is *non-combustible*, as claimed in Bowen. The non-combustible material of Bowen comprises oxygen donor material. In contrast, Applicants' claimed wrapper is *combustible* and it comprises the oxygen donor material. Bowen never suggests adding the oxygen donor material to the paper of the conventional cigarette.

Moreover, with respect to these pending independent claims 12, 20, 45 and 46, the use of the combustible cigarette paper or treatment paper of the claimed invention produces a cigarette

paper with very little sidestream smoke on burning because of the novel combination of an oxygen storage and donor metal oxide oxidation catalyst and an essentially non-combustible finely divided porous particulate adjunct for the catalyst or, more specifically claimed in Claims 12 and 20, a rare earth metal oxide oxidation catalyst and an essentially non-combustible finely divided porous particulate adjunct for the catalyst. The oxygen storage and donor metal oxide oxidation catalyst and the non-combustible finely divided porous particulate adjunct are used in combination to achieve sidestream smoke reduction. As taught at pages 17 and 18 of the specification, 'in combination' means that the materials are used together, for example, either by co-mingling, coating the catalyst on the adjunct, impregnating the catalyst within or on the porous surface adjunct or in layers. Quite surprisingly, this combined use of the metal oxide with the adjunct provides sidestream smoke control. It was quite unexpected that these two constituents used together in combination provide sidestream smoke control by simply being part of a combustible cigarette paper. Other than constituents used to provide this combination in sheet form, there is no other requirement for other components to control sidestream smoke.

The cigarette of the cited document is designed to burn at conventional free-burn rates and to rely on the oxygen storage component to release oxygen from the *non-combustible* material to support that free-burn rate. This cited document does not contemplate that sidestream smoke control can be realized by combined use of an oxygen storage and donor metal oxide (e.g. rare earth metal oxide) in combination with a porous particulate adjunct to reduce sidestream smoke, as set forth in claims 12 and 20. This use in combination is not realized in the cited document. Regarding claim 45, Applicants respectfully submit that Bowen does not contemplate a low sidestream smoke cigarette comprising, *inter alia*, a treatment that is combustible, burns and ashes, and that has sidestream smoke treatment composition that comprises in combination, an oxygen storage and donor metal oxide oxidation catalyst precursor and an essentially non-

combustible finely divided porous particulate adjunct for the catalyst, where the oxygen storage and donor metal oxide oxidation catalyst releases oxygen at free burn rate temperatures for the cigarette.

Further, Applicants respectfully submit that Bowen does not contemplate a cigarette treatment paper for a use on a smokable tobacco rod for reducing sidestream smoke emitted from the burning cigarette, where the paper, which is combustible, burns and ashes, including a sidestream smoke treatment composition comprising in combination an oxygen storage and donor metal oxide oxidation catalyst precursor and an essentially non-combustible finely divided porous particulate adjunct where said oxygen storage and donor metal oxide oxidation catalyst releases oxygen at free burn rate temperatures of a cigarette made from the cigarette paper.

The Office Action asserts that Bowen teaches that the non-combustible treatment material can include two components: a porous non-combustible material (see Col. 4, lines 1ff) which can be zeolite (see Col. 7, lines 5ff and Col. 8, lines 45ff) and an oxygen storage component, whereby the cerium oxide is in situ or applied to the surface of the zeolite (Col. 7, lines 33ff). The non-combustible treatment material surrounds the cigarette paper of a conventional cigarette and typically is a tube. The tube does not comprise an oxygen storage and donor metal oxide oxidation catalyst *and* an essentially non-combustible finely divided porous particulate adjunct for the catalyst.

In the Response to Arguments section of the Office Action, the Office Action asserts that Applicants argued, at page 19 of the response filed October 30, 2007, that the tube of Bowen does not have an oxygen storage or donor metal oxide. It is submitted that the Applicants argued that the tube does not comprise an oxygen storage and donor metal oxide oxidation catalyst *and* an essentially non-combustible finely divided porous particulate adjunct for the catalyst, as reiterated above. This cited document does not contemplate that sidestream smoke control can be

realized by combined use of an oxygen storage and donor metal oxide (e.g. rare earth metal oxide) in combination with a porous adjunct to reduce sidestream smoke, as set forth in the pending claims. This use in combination is not realized in the cited document. Moreover, the tube is non-combustible, whereas the wrapper/paper of the claimed invention is combustible.

Further, in rebuttal to the position taken in the Office Action, paragraph 6 of Mr. Snaidr's declaration addresses the disclosure of Bowen, WO99/53778 (equivalent to U.S. Patent no. 6,286,516). Mr. Snaidr is a co-inventor of the Bowen patent.

Mr. Snaidr declares that Bowen "is directed to a cigarette that has a non-combustible material which surrounds and is in substantial contact with a conventional cigarette paper portion of a cigarette. The non-combustible material includes an oxygen storage component. The non-combustible material is not consumed when the cigarette is smoked. This reference is, therefore, not directed to a combustible wrapper comprising an oxygen storage donor material (e.g. cerium oxide) (claim 1). Moreover, this reference is not directed to a combustible paper comprising, in combination, a rare earth metal oxide and an essentially non-combustible finely divided porous particulate adjunct for the rare earth metal oxide (claims 12 and 20). Furthermore, this reference is not directed to a combustible paper comprising, in combination, an oxygen storage and donor metal oxide oxidation catalyst precursor and an essentially non-combustible finely divided porous particulate adjunct for the catalyst (claims 45 and 46). (paragraph 7)

For at least these reasons, Applicants respectfully submits that the cited document does not teach or suggest the claimed invention.

Rejections under 35 U.S.C. § 103

Claims 8 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bowen in view of U.S. Patent No. 5,040,551 to Schlatter. Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bowen.

Applicants respectfully traverse these rejections. As set forth above, Bowen fails as a primary reference, and Schlatter adds nothing relevant to the disclosure of Bowen. Schlatter discloses that carbon monoxide levels of coated carbonaceous materials can be reduced by adding metals or their oxides to the coating of the fuel material. This discloses nothing relevant to the rejected claims, and Applicants respectfully traverses this rejection of claims 8 and 19.

Specifically, Schlatter does not disclose the features of claims 1, 6, and 7, from which claim 8 depends, and of claims 12, 15, 16, and 17, from which claim 19 depends. In particular, Mr. Snaidr's declaration notes that Bowen does not disclose a combustible wrapper comprising porous particulate cerium oxide, so the disclosure in Schlatter of iron oxide does not provide that which is missing from Bowen to make obvious claim 8. Similarly, Mr. Snaidr declares that Bowen is not directed to "a combustible paper comprising an oxygen storage donor material (e.g. cerium oxide) (claim 1). Moreover, this reference is not directed to a combustible paper comprising, in combination, a rare earth metal oxide and an essentially non-combustible finely divided porous particulate adjunct for the rare earth metal oxide (claims 12 and 20). Furthermore, this reference is not directed to a. combustible paper comprising, in combination, an oxygen storage and donor metal oxide oxidation catalyst precursor and an essentially non-combustible finely divided porous particulate adjunct for the catalyst (claims 12 and 20)." Therefore, Applicants respectfully submit that Schlatter's iron oxide disclosure does not provide that which is missing from Bowen to make obvious claim 12.

Applicants respectfully submit that Bowen does not render claim 9 obvious. As set forth above, Bowen is directed to a non-combustible device. Claim 9 depends from claim 1, and, for the reasons set forth above, and as set forth in Mr. Snaidr's declaration, Bowen "is not directed to a combustible wrapper comprising an oxygen donor material (e.g., cerium oxide) (claim 1)." Further, as the Office Action admits, Bowen does not suggest or disclose a loading rate. Thus, it is only with the information provided in the pending application that one can suggest a loading rate. This is true because the skilled practitioner can calculate a loading based only on the use disclosed in the pending application. Thus, Applicants respectfully submits that it is only by impermissible hindsight reconstruction that the skilled practitioner can make this calculation. Applicants respectfully traverse this rejection.

The Examiner has also rejected Claims 10-11, 15-16 and 22-23 under 35 U.S.C. § 103(a) as being unpatentable over Bowen in view of U.S. Patent No. 5,004,711 to Grodek. Applicants respectfully traverse this rejection. Bowen is directed to a non-combustible device, and Grodek is directed to stabilization of zirconia powders made from zirconia sols. Ceria, magnesia, and other oxides can serve as stabilizer. Applicants respectfully submit that, as set forth above, Bowen fails as a primary reference and the disclosure of Grodek does not make up for the deficiencies of Bowen, and Applicants respectfully traverses this rejection.

For the reasons discussed above with respect to Bowen, none of these references, even if appropriately combinable with Bowen, cures the deficiencies of this combination or teaches or suggests the subject matter of these claims.

Rejections based on Obviousness-type Double Patenting

Claims 1, 12, 20, 45, and 46 stand rejected on the ground of obviousness-type double patenting over claims 5 and 13 of Bowen, U.S. Patent No. 6,286,516. Applicants respectfully traverse this rejection.

Bowen '516 does not teach or suggest a combustible wrapper (a structural feature) comprising *porous particulate* cerium oxide of claim 1. Moreover, Bowen does not contemplate that sidestream smoke control can be realized by combined use of an oxygen storage and donor metal oxide (e.g. rare earth metal oxide) in combination with a porous adjunct to reduce sidestream smoke, as set forth in claims 12, 20, 45 and 46. This use in combination is not realized in the cited document. The material of Bowen '516 is *non-combustible*, as claimed in Bowen '516. The *non-combustible* material of Bowen '516 comprises oxygen donor material. In contrast, Applicants' claimed wrapper is *combustible* and it comprises the oxygen donor material. Bowen '516 never suggests adding the oxygen donor material to the paper of the conventional cigarette.

Simply put, Bowen '516 discloses a different invention. Again, the apparatus of Bowen '516 is non-combustible. As set forth above, there are significant differences between what Bowen discloses or fairly suggests and the pending claims. The declaration of Mr. Snaidr clearly sets forth these points and rebuts the assertions of the Office Action. Therefore, Applicants respectfully traverses this rejection.

CONCLUSION

Applicants respectfully submit that the claims are in condition for allowance for at least the reasons set forth above. Applicants respectfully traverse the pending rejections and earnestly solicit favorable action thereon.

Respectfully submitted,

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